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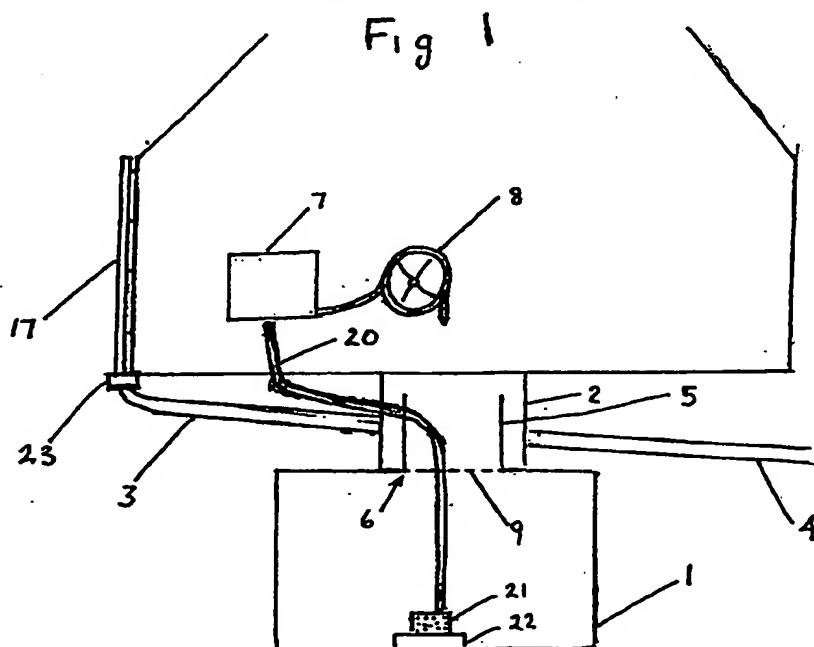
(56) Documents Cited
GB 2266116 A GB 2242926 A

(58) Field of Search
UK CL (Edition O) E1X XK7H
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(54) Rainwater collection and dispersal system

(57) A rain water collection and dispersal system comprises:

- (1) a rain water storage tank 1 which is located underground so as to receive rain water from an underground rain water drainage system;
- (2) a cylindrical man-hole cover 2 which screw fits on to the top of the storage tank 1 and which is provided with means for connection to an upstream rain water drainage pipe 3 and a downstream rain water drainage pipe 4;
- (3) a cylindrical filter unit 5 which is locatable inside the man-hole cover 2 and which serves to prevent debris, sludge and the like from entering the storage tank 1;
- (4) a pump 7 for extracting rain water from the storage tank 1; and
- (5) a hose pipe 8 or similar water dispersal means which is connectible to the outlet of pump 7.



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Fig 1

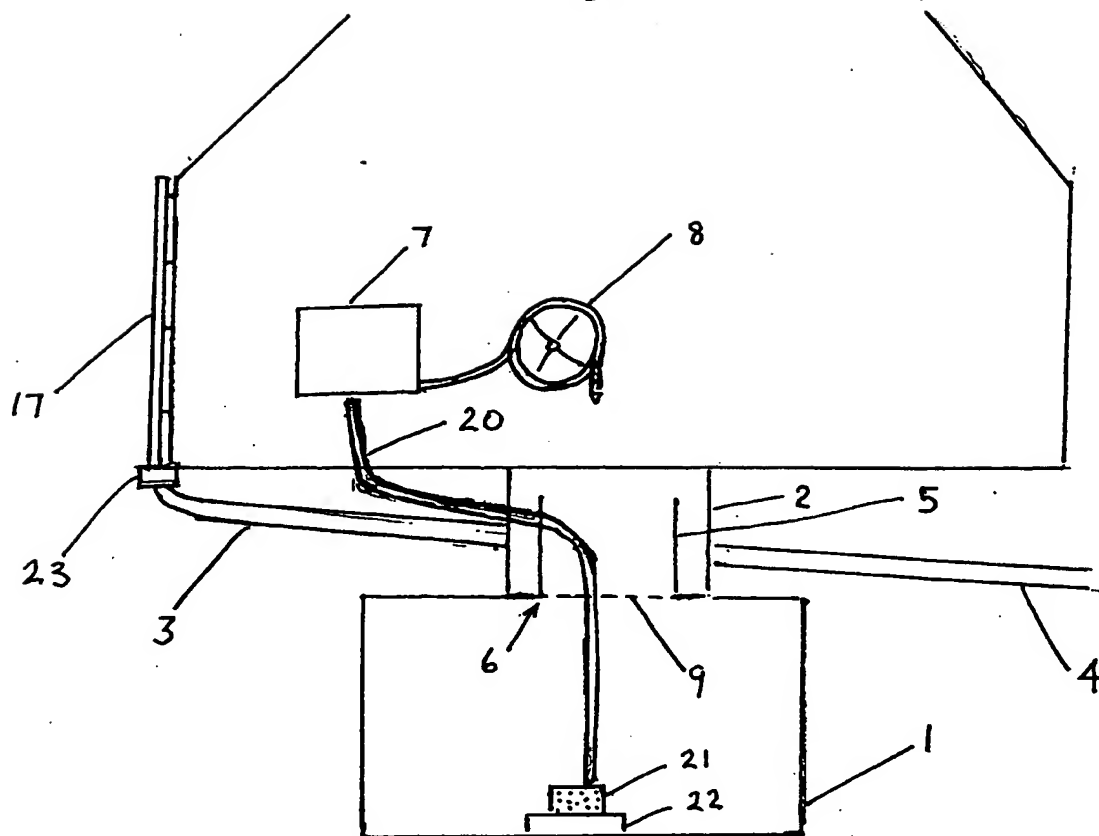


Fig 2

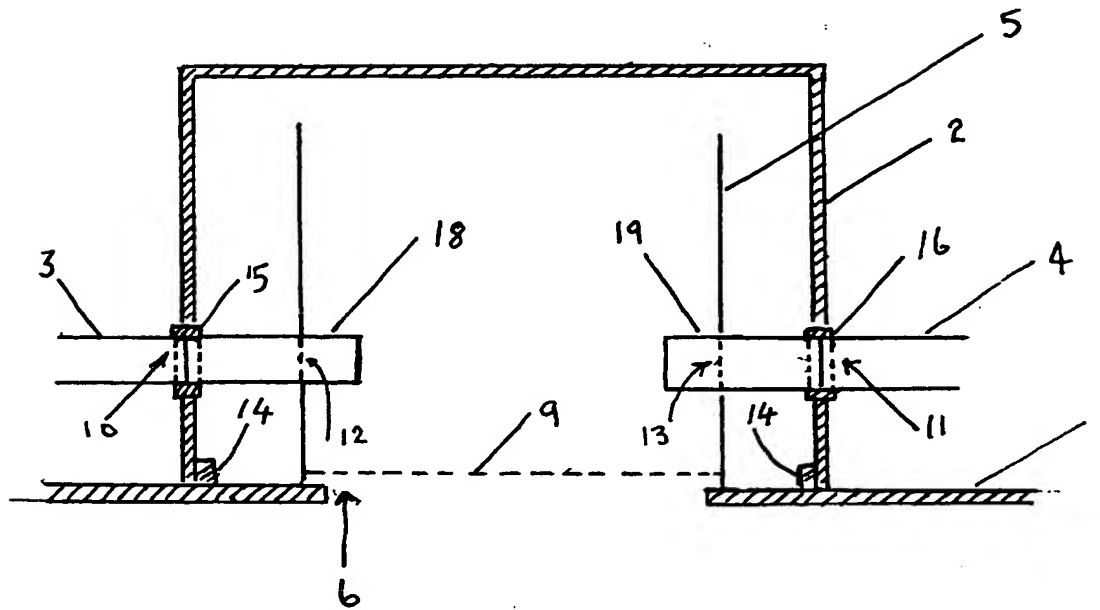
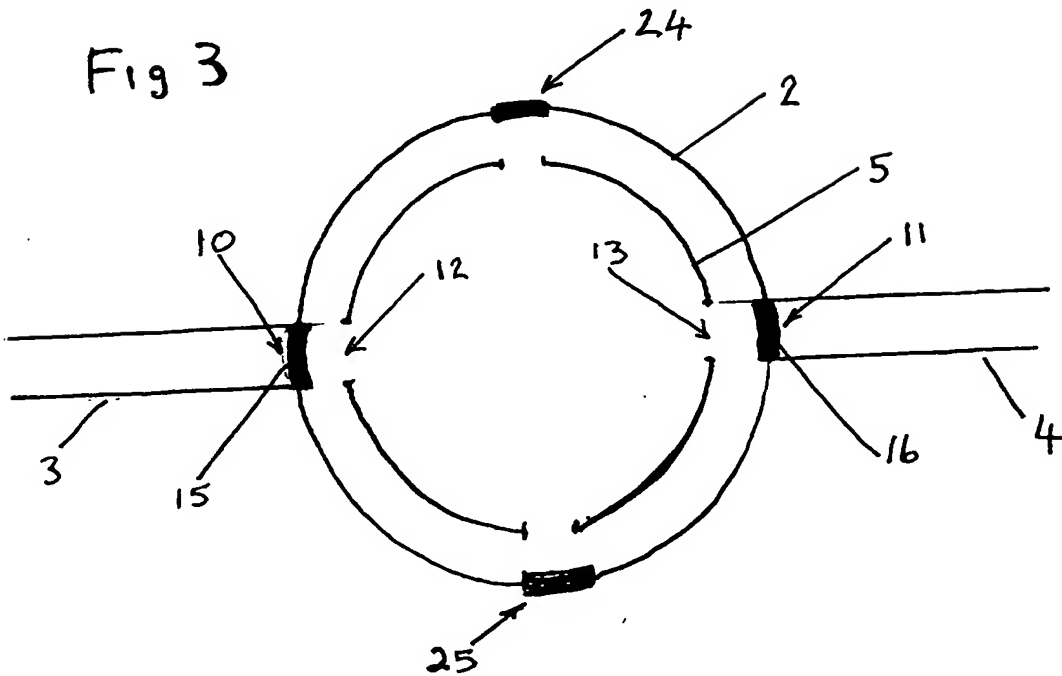


Fig 3



RAIN WATER COLLECTION AND DISPERSAL SYSTEM

This invention relates to a rain water collection and dispersal system.

Hose pipe bans against watering gardens and washing cars are frequently imposed by water companies and local authorities during spells of very hot dry weather. Such bans inconveniently can extend for long periods of time, even into winter months, until reservoirs are replenished.

An object of the present invention is to provide a rain water collection and dispersal system which usefully can be brought into operation during periods of such hose pipe bans.

A further object of the present invention is to provide a rain water collection and dispersal system which can be utilised to reduce water usage charges which are based on a metering system.

The system of the invention is suitable for domestic, industrial, agricultural and sporting applications.

According to the present invention there is provided a rain water collection and dispersal system comprising:

- (a) a rain water storage tank suitable for underground location in proximity to an underground rain water drainage pipe;
- (b) a man-hole cover connectible to the storage tank so as to give access thereto when removed therefrom, said man-hole cover being provided with means for connection to an upstream underground rain water drainage pipe enabling transmission of rain water from the upstream pipe to the storage tank and means for connection to a downstream underground rain water drainage pipe enabling transmission of overflow rain water from the storage tank to the downstream pipe;
- (c) a filter unit for trapping debris, sludge and the like from the rain water before it enters the storage tank;
- (d) a pump for extracting rain water from the storage tank; and
- (e) water dispersal means connectible to the outlet of the pump.

Preferably, the man-hole cover is provided with a plurality of connection means around its peripheral wall enabling the cover to be connected to a plurality of rain water drainage pipes.

Further preferably, each means of connecting the man-hole cover to a rain water drainage pipe consists of an aperture in the peripheral wall of the man-hole cover in which aperture is seated a removable rubber lined collar which provides a tight fit and seal for a rain water drainage pipe inserted into the collar.

Suitably, the water dispersal means connectible to the pump is a hose pipe, sprinkler or the like.

A specific embodiment of the invention will now be described by way of example only, with reference to the accompanying drawings in which:

Figure 1 is a schematic layout of the rain water collection and dispersal system;

Figure 2 is a sectioned elevation of a man-hole cover and filter unit which are component parts of the system; and

Figure 3 is a plan view of the man-hole cover and filter unit.

Referring to Figure 1 of the drawings, the rain water collection and dispersal system comprises the following major component parts:

- (1) a storage tank 1 which is locatable underground in proximity to an underground rain water drainage pipe and which collects any rain water which falls upon the roof of the building with which the system is associated;
- (2) a cylindrical man-hole cover 2 which screw fits on to the top of the storage tank 1 and which is connectible to an upstream rain water drainage pipe 3 and to a downstream rain water drainage pipe 4;
- (3) a cylindrical filter unit 5 which is locatable inside the man-hole cover 2 and sits on top of an aperture 6 formed in the top of the storage tank 1;
- (4) a pump 7 which when operated extracts rain water from the storage tank 1; and
- (5) a hose pipe 8 (or like water dispersal means) which is connectible to the outlet of the pump 7.

The storage tank 1 is located underground at such depth that when the man-hole cover 2 sits over the aperture 6 on top of the storage tank 1, the upper surface of the man-hole cover 2 is at ground level. The diameter of the man-hole cover 2 is greater than the diameter of the aperture 6. The storage tank 1 may be of any suitable plastic or metallic material and may be of any desired shape or dimensions.

Referring to Figure 2 of the drawings, it will be seen that the cylindrical filter unit 5 is fitted at its bottom with a filter mesh 9 which fits over aperture 6 in the top of tank 1 when the filter unit 5 is located in position inside the man-hole cover 2.

Referring to Figures 2 and 3 of the drawings, it will be seen that the man-hole cover 2 has diametrically opposite apertures 10 and 11 formed in its cylindrical side wall and the filter unit 5 has corresponding diametrically opposite apertures 12 and 13 formed in its cylindrical side wall.

The storage tank 1 is provided with a threaded neck 14 spaced a little apart from and around the aperture 6. The man-hole cover 2 is correspondingly threaded so that it can screw fit on to neck 14 of tank 1.

The man-hole 2 has collars 15 and 16 fitted into apertures 10 and 11. The collars 15 and 16 are lined with rubber which acts as a sealing means.

Upstream rain water drainage pipe 3 leading from wall mounted down pipe 17 has one end tightly fitted into rubber lined collar 15. Plastic pipe 18 has one end also tightly fitted into rubber lined collar 15 and its other end projects through aperture 12 in filter unit 5. A similar arrangement prevails at the diametrically opposite rubber lined collar 16. Plastic pipe 19 has one end projecting through aperture 13 of filter unit 5 and its other end is tightly fitted into rubber lined collar 16. Downstream rain water pipe 4 has one end also tightly fitted into rubber lined collar 16.

In a domestic application of the system of the invention, the pump 6 (which may be a standard oil or air cooled pump) can be conveniently located in the garage of the house. A pipe 20 leads from the inlet of pump through the man-hole cover 2 and through a hole in the top of the storage tank 1 to reach to the bottom of tank 1. The lower end of pipe 20 is connected to a filter 21 located on a concrete block 22 which sits on the floor of tank 1.

Rain water from the roof of the house is directed downwards through down pipe 17 and then through a filter grid 23 and then into downwardly sloping rain water drainage pipe 3 and so on through filter unit 5 into storage tank 1. Any debris, sludge or the like which is transmitted from the gutter of the house is trapped on filter mesh 9 which can be cleaned periodically by removing plastic pipes 18 and 19 and filter unit 5. Filter unit 5 also can be removed to gain entry into storage tank 1.

When the tank 1 is full of rain water, any overflow will be transmitted by gravity through plastic pipe 19 and downstream rain water drainage pipe 4 into the main sewer system.

The man-hole cover 2 is provided with further collared apertures 24 and 25 to accommodate additional rain water drainage pipes similar to pipes 3 and 4.

CLAIMS

1. A rain water collection and dispersal system comprising:
 - (a) a rain water storage tank suitable for underground location in proximity to an underground rain water drainage pipe;
 - (b) a man-hole cover connectible to the storage tank so as to give access thereto when removed therefrom said man-hole cover being provided with means for connection to an upstream rain water drainage pipe enabling transmission of rain water from the upstream underground pipe to the storage tank and means for connection to a downstream underground rain water drainage pipe enabling transmission of overflow rain water from the storage tank to the downstream pipe;
 - (c) a filter unit for trapping debris, sludge and the like from the rain water before it enters the storage tank;
 - (d) a pump for extracting rain water from the storage tank; and
 - (e) water dispersal means connectible to the outlet of the pump.
2. A system as claimed in claim 1 wherein the man-hole cover is provided with a plurality of connection means around its peripheral wall enabling the cover to be connected to a plurality of rain water drainage pipes.
3. A system as claimed in claim 1 or 2 wherein each means of connecting the man-hole cover to a rain water drainage pipe consists of an aperture in the peripheral wall of the man-hole cover in which is seated a removable rubber or plastic lined collar which provides a tight fit and seal for a rain water drainage pipe inserted into the collar.
4. A system as claimed in any one of the preceding claims wherein the water dispersal means is a hose pipe, sprinkler or the like.



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Claims searched: 1-4

Examiner: D. Haworth
Date of search: 8 August 1996

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.O): E1X (XKTH)

Int Cl (Ed.6): E03B 3/00, 3/02, 3/03

Other:

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
A	GB 2266116 A (Devey)	
A	GB2242926 A (Kelly et al)	

X Document indicating lack of novelty or inventive step
Y Document indicating lack of inventive step if combined with one or more other documents of same category.

& Member of the same patent family

A Document indicating technological background and/or state of the art.
P Document published on or after the declared priority date but before the filing date of this invention.
E Patent document published on or after, but with priority date earlier than, the filing date of this application.